

1 ~~1.~~ A surgical instrument for manipulating a needle
2 with attached suture, comprising:

3 an elongated shaft including a distal region having
4 a first jaw with a mount for supporting the needle; and

5 a second jaw mounted to the distal region and having
6 a passage which, when aligned with the mount, is positioned
7 to receive the needle from the mount, the second jaw being
8 pivotable, with respect to the first jaw, between a delivery
9 position in which the second jaw is spaced relatively
10 closely to the mount with the passage misaligned with the
11 mount and an open, misaligned position, the second jaw being
12 axially translatable relative to the mount to an open,
13 aligned position in which the passage is aligned with the
14 mount.

1 2. The surgical instrument of claim 1, wherein the
2 second jaw is pivotable with respect to the mount between
3 the delivery position and the open, misaligned position
4 along a first arcuate path, said second jaw being axially
5 translatable with respect to the mount to the open, aligned
6 position along a linear path.

1 3. The surgical instrument of claim 2, wherein the
2 second jaw is pivotable between the open, aligned position
3 to a closed position along a second arcuate path in which
4 the passage is aligned with the mount and in position to
5 receive the needle from the mount.

1 4. The surgical instrument of claim 3, wherein the
2 second jaw includes a first pivot slot and the first jaw
3 includes a first pivot pin movably retained within the first
4 pivot slot, the first pivot pin defining a center of
5 rotation for the first arcuate path.

1 5. The surgical instrument of claim 4, wherein the
2 second jaw includes a second pivot slot and the first jaw
3 includes a second pivot pin movably retained within the
4 second pivot slot, the second pivot pin defining a center of
5 rotation for the second arcuate path.

1 6. The surgical instrument of claim 5, wherein the
2 first and second pivot slots each include arcuately-shaped
3 sections extending to linear sections, the first pivot pin
4 positioned within the linear section of the first pivot slot
5 and the second pivot pin positioned within the arcuately-
6 shaped section of the second pivot slot when the second jaw
7 is pivotable along the first arcuate path.

1 7. The surgical instrument of claim 6, wherein the
2 second pivot pin is positioned within the linear section of
3 the second pivot slot and the first pivot pin is positioned
4 within the arcuately-shaped section of the first pivot slot
5 when the second jaw is pivotable along the second arcuate
6 path.

1 8. The surgical instrument of claim 7, wherein the
2 first and second pivot pins are positioned within the linear
3 sections of the first and second pivot slots, respectively
4 as the second jaw is translatable along the linear path.

1 9. The surgical instrument of claim 6, wherein the
2 linear section of the first pivot slot is substantially
3 parallel to the linear section of the second pivot slot.

1 10. The surgical instrument of claim 9, wherein the
2 linear sections of the first and second pivot slots are
3 substantially parallel to a longitudinal axis of the

4 elongated shaft when the second jaw is translatable along
5 the linear path.

1 11. The surgical instrument of claim 1 wherein the
2 passage of the second jaw is positioned proximally of the
3 mount of the first jaw in the delivery position.

1 12. The surgical instrument of claim 3, further
2 comprising

3 an actuator having a distal end coupled to the
4 second jaw; and

5 a handle disposed at a proximal end of the shaft and
6 coupled to a proximal end of the actuator, the handle being
7 actuatable from a fully open position to a fully closed
8 position to axially move the actuator to move the second jaw
9 from the delivery position, through the open position, and
10 to the closed position.

1 13. The surgical instrument of claim 1, further
2 comprising a needle tip protector axially offset from the
3 passage of the second jaw.

1 14. The surgical instrument of claim 13, wherein
2 the needle tip protector is offset proximally from the
3 passage of the second jaw.

4 15. The surgical instrument of claim 13, wherein
5 the needle tip protector is offset distally from the passage
6 of the second jaw.

7 16. The surgical instrument of claim 1, wherein the
8 first jaw is stationary relative to the elongated shaft.

1 17. A method of delivering a needle with attached
2 suture to a surgical site, the method comprising:
3 providing a surgical instrument including an
4 elongated shaft with a distal region having a first jaw with
5 a mount for the needle, and a second jaw mounted to the
6 distal region and having a passage for receiving the needle
7 from the mount;
8 positioning the needle in the mount;
9 moving the second jaw relative to the first jaw to
10 position the surgical instrument in a delivery position with
11 the second jaw spaced relatively close to the mount and the
12 passage of the second jaw misaligned with the mount;
13 delivering the surgical instrument to a surgical
14 site; and
15 pivoting the second jaw relative to the mount from
16 the delivery position into an open, misaligned position in
17 which the second jaw is spaced further away from the mount;
18 and
19 translating the second jaw relative to the mount to
20 an open, aligned position in which the passage is aligned
21 with the mount.

1 18. The method of claim 17, wherein pivoting the
2 second jaw is along a first arcuate path and translating the
3 second jaw is along a linear path.

1 19. The method of claim 17, further comprising
2 after translating the second jaw into the open, aligned
3 position, actuating the second jaw to pivot the surgical
4 instrument to a closed position by punching the needle
5 through tissue to be sutured and capturing the needle by the
6 passage of the second jaw.

1 20. The method of claim 19, further comprising
2 after actuating the surgical instrument from the open
3 suturing position to the closed position, withdrawing the
4 surgical instrument from the surgical site, removing the
5 needle from the passage of the second jaw, and repositioning
6 the needle in the mount of the first jaw.

1 21. The method of claim 17, wherein delivering the
2 surgical instrument includes passing the surgical instrument
3 in the delivery position through a cannula which extends
4 from a portal to the surgical site.

1 22. The method of claim 17 wherein positioning the
2 needle further includes protecting a pointed tip of the
3 needle in the delivery position by positioning the pointed
4 tip within a needle tip protector formed at a distal end of
5 the second jaw.